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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------------|-------------|----------------------|---------------------|------------------|
| 10/567,551 | 03/06/2006 | Akihiko Nishio | L9289,06106 | 9256 |
| 52989 | 7590 | 11/12/2009 | | |
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| EXAMINER | | | | |
| CASCA, FRED A | | | | |
| ART UNIT | | PAPER NUMBER | | |
| 2617 | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/567,551

Applicant(s)

NISHIO ET AL.

Examiner

FRED A. CASCA

Art Unit

2617

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____
- Paper No(s)/Mail Date: _____

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed September 1, 2009 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 16-17 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda (US 6,553,038) in view of Nilsson (US 2003/0022685 A1) and further in view of Sibecas (US 2004/0128605).

Referring to claim 16, Fukuda discloses a transmitting apparatus that transmits a pilot signal (abstract and figure 1) , the transmitting apparatus comprising:
a transmitting section that transmits information of an arrangement of a plurality of time slots (col. 16, lines 22-25) .

Fukuda does not specifically disclose slots having pilot signals of a pilot patterns, each of the pilot pattern having a mutually different arrangement density in a frequency domain or a time domain, and that transmits per time slot the pilot signals of the pilot pattern according to the arrangement of the plurality of time slots.

Nilsson discloses that signals in each time slot comprise a block of pilot symbols followed by a block of data symbols where slots 36-40 respectively contain pilot blocks 36b-40b and data blocks 36c-40c (Par. 19).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the invention of Fukuda in the format claimed by incorporating the teachings of Nilsson, for the purpose of providing an efficient communication system.

The combination above is silent on the each of the pilot patterns having mutually different arrangement density as claimed.

Sibecas discloses pilot patterns having mutually different arrangement densities (Par. 51, "patterns with higher density patterns," "lower density of pilot symbols", note that pilot signals have low or high density patterns or higher density patterns, thus, they would be of different density arrangements).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the combination in the format claimed, for the purpose of providing an efficient communication system.

Referring to claim 17, the combination of Fukuda/Nilsson/Sibecas discloses the transmitting apparatus according to claim 16, and inherently discloses the transmitting section repeats processing of transmitting per time slot the pilot signals of the unique pilot pattern according to the arrangement of the plurality of time slots (Fukuda, col. 16, lines 22-25 and Nilsson, par. 19).

It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the invention of Fukuda in the format claimed by incorporating the teachings of Nilsson, for the purpose of providing an efficient communication system.

Claims 19 and 20 are analogous to the features of claim 16. Thus, the combination of Fukuda/Nilsson/Sibecas discloses all elements of claims 19 and 20.

4. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukuda (US 6,553,038) in view of Nilsson (US 2003/0022685 A1) further in view of Sibecas (US 2004/0128605) and further in view of well known prior art (MPEP 2144.03).

Referring to claim 18, the combination of Fukuda/Nilsson/Sibecas discloses the transmitting apparatus according to claim 16.

The combination does not specifically disclose a multiplexing section that multiplexes the pilot signals of the unique pilot pattern and user data according to the arrangement of the plurality of time slots to generate a multiplexed signal, wherein the transmitting section transmits the multiplexed signal.

The examiner takes official notice of the fact that multiplexing pilot symbols is well known in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the combination in the format claimed for the purpose of providing an efficient communication system.

Response to Arguments

5. Applicant's arguments with respect to claims 16-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred A. Casca whose telephone number is (571) 272-7918. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Harper, can be reached at (571) 272-7605. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

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applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Fred A. Casca/

Examiner, Art Unit 2617

/VINCENT P. HARPER/

Supervisory Patent Examiner, Art Unit 2617